

LifeSafety

MAGAZINE

Information on life safety from the leader in fire detection

Mega-Mall Manager Shares Issues Facing Retailers

Retail Characteristics
Impact Detector
Selection

ADAAG Update

Varying Factors
Complicate Smoke
Detector Selection

Need, Application and
the Location of
Detectors





In an Emergency, Could *You* Find the Nearest Exit?

A life safety system should stand ready to evacuate the building, no matter the circumstances. But many factors can hinder a timely evacuation. Occupants may be unfamiliar with the building and its emergency egress routes. Persons with visual impairment may be unable to follow exit markings or signage. And if an area fills with smoke, even unimpaired occupants can become confused and disoriented. Such situations are a formula for tragedy.

When visual cues aren't enough, you need an evacuation signal that doesn't rely on perfect visibility. You need something that can cut through the confusion and guide people to safety. In short, you need ExitPoint.™

Advanced Ideas. Advanced Solutions.

ExitPoint is the latest advanced idea from System Sensor and a quantum leap in egress technology. Utilizing a broadband signal – also known as Directional Sound – ExitPoint helps people evacuate a building even when all other exit cues are totally obscured. It can also pinpoint exits in non-fire emergencies, assisting egress within unfamiliar surroundings.

Works With Existing Systems

Traditional notification appliances alert building occupants to an emergency – an essential function – but they don't tell people how to get out. ExitPoint, the audible exit sign, ties into a facility's fire alarm control panel and guides people to building exits reliably and safely. ExitPoint works with existing fire alarm systems; it's listed to UL 464, FM, and CSFM and the technology is under consideration for NFPA 72.

Safer, Quicker Evacuation

ExitPoint can even overcome the natural tendency of people to exit the way they entered, which is not necessarily the safest or even the shortest way. Studies show that people intuitively follow the unique ExitPoint signal to the nearest exit, reducing evacuation times by as much as 75% and improving a fire system's potential to save lives.

For more information, visit exitpoint.systemsensor.com. For a complete Specifier's Kit, including a demonstration CD-ROM and white paper, call **800-736-7672**.



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SENSOR**

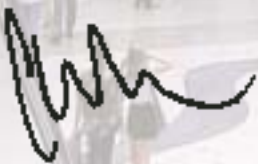
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Realize Potential In Retrofit Retail

Ranging from quaint mom-and-pop establishments and specialty boutiques to gigantic suburban malls with multiple department stores, retail space is where consumers gather to buy goods and services of all kinds. And every time a company opens its doors to the general public, there is an inherent fire and life-safety risk.

Because fire risks must be addressed BEFORE welcome signs are hung, the retail sector holds excellent opportunities for the fire and life-safety industry. The retail sector grosses a whopping 20.32 square feet of leasable area per American citizen. While new gross leasable area has been holding steady with only small annual increases after a huge surge in the 1980s, the retrofit market to maintain the nation's 5.95 billion square feet of retail space is booming. Of all retail space today, 3.5 billion square feet are at least 20 years old.



Carl Johnson
Vice President of Sales
System Sensor

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Cover: Woodfield Mall regional shopping center in Schaumburg, Ill., about 25 miles west of Chicago, is one of the world's largest malls, with 2.2 million square feet of selling space. It is home to nearly 300 specialty shops, restaurants and department stores, including Nordstrom, Marshall Field's, Lord & Taylor, JCPenney and Sears.



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LifeSafety Magazine is provided as a courtesy to our colleagues in the fire and life-safety community. While we make every attempt to ensure the accuracy of all information contained herein, product specifications and building codes are always subject to change. Under no circumstances should product or code information published in LifeSafety Magazine be considered a substitute for written instructions from the manufacturer or Authority Having Jurisdiction. Always follow proper installation and maintenance practices, including carefully reading and understanding manufacturers' instructions before attempting to install, operate or maintain any life-safety equipment.

Your thoughts and comments are welcome at info@systemsensor.com.
For more information on System Sensor products, call 800-927-6676 or visit www.systemsensor.com.

Mega-Mall Manager Shares Issues Facing Retailers

Marc Philippe Strich, general manager of Woodfield Mall, talked with LifeSafety about fire and life-safety protection measures taken at the 34-year-old mall.

Woodfield Mall regional shopping center in Schaumburg, Ill., about 25 miles west of Chicago, is one of the world's largest malls, with 2.2 million square feet of selling space. It is home to nearly 300 specialty shops, restaurants and department stores, including Nordstrom, Marshall Field's, Lord & Taylor, JCPenney and Sears.



Woodfield Mall

QUESTIONS

What issues concern you most when designing and/or maintaining a fire/life-safety system? What issues make retail space different from other facilities?

ANSWERS

The system must be designed to accommodate the large amount of customers that come to Woodfield. A full-time public safety staff, along with other center departments, must be fully trained to deal with any possibility, as well as having contingency plans in place should the primary systems be compromised.

Due to the amount of glass fronts in our common areas, our staff is trained to move customers to secure, non-public, interior corridors in times of extreme weather, such as tornadoes.

Does Woodfield Mall have an in-house fire department?

Woodfield has a 24-hour dispatch center, and the Village of Schaumburg Fire Department is equipped to respond to emergencies at Woodfield.

Does the size or age of Woodfield Mall affect design/maintenance?

The size and age of the building require an organized inspection process to ensure complete review of all facilities. Cooperation and constant communication with local fire department and building inspection officers is crucial in dealing with the constant tenant movement in the center.

What are your maintenance practices and how long do they take?

Maintenance practices include weekly sprinkler room and fire pump checks, along with all required NFPA testing. Outside contractors are utilized for the majority of the smoke/beam detector testing and assisting with sprinkler system flow testing.

How does your notification/alarm system work to clear such huge areas?

Our public safety officers, along with other departments, are trained to clear out all public and non-public areas in an efficient manner. This includes section-by-section cross-check verification via our dispatch center.

Are there zones that have different smoke detection parameters than others?

Each restaurant has to meet Village of Schaumburg life-safety requirements. Restaurants are required to have fire suppression systems tailored to the unique needs of each type of cooking apparatus. All local and NFPA requirements are met in common and tenant areas at Woodfield. [LS](#)

Conventional Detection Plug-in Smoke Detector 4WTR-B:

The 4WTR-B is a 4-wire, photoelectric i3 smoke detector with thermal sensor and Form C relay.

4WTR-B

Detection:	Photoelectric
Wiring:	4-wire
Heat Sensor:	135°F (57.2°C) fixed
Sounder:	85 dBA
Operating Voltage:	12/24 V non-polarized nominal, 10 min. to 35 max.
Maximum Ripple Voltage:	30% of nominal (peak to peak)
Alarm Current:	35mA max.
Standby Current:	50 µA maximum average
Alarm Contact Ratings:	0.5 A @ 30 V AC/DC
Auxiliary Contact:	Form C
Auxiliary Contact Ratings:	2 A @ 30 V AC/DC
Temperature Range:	32° to 100°F (0° to 37.8°C)
Humidity Range:	0% to 95% RH, noncondensing
Freeze Trouble:	41°F (5°C)
Sensitivity:	2.5%/ft. nominal
Wiring Gauge:	14-22 AWG
Dimensions:	2.0" (51 mm) H x 5.3" (127 mm) Dia.



Retail Characteristics Impact Detector Selection

Understanding detector technology is key to designing automatic fire alarm systems for retail and other similar applications.

Designing fire alarm systems for atriums, lobbies and other types of high-ceiling facilities can be tricky. This is especially true when considering potential challenges such as extreme temperatures, high air velocity and potential smoke stratification during a fire.

Beam smoke detectors are valuable components in these applications because they offer unique capabilities that can overcome many of the challenges associated with high-ceiling structures. It is important, therefore, that fire alarm designers gain an understanding of the technology and limitations of specific smoke detectors when selecting and applying them to fire alarm systems.

Projected beam smoke detectors consist of a transmitter that projects an infrared beam across the protected area to a receiver containing a photosensitive cell, which monitors the signal strength of the light beam. Some beam detectors consist of a transmitter and a receiver in one unit, with a reflector used on the other end to return the light. One of the advantages of units such as these is that wiring across the room (transmitter to receiver) is no longer required.

The detector works on the principle of light obscuration. The photosensitive element of the beam smoke detector sees light produced by the transmitter in a normal condition. The receiver is calibrated to a preset sensitivity level based on a percentage of total obscuration. The manufacturer determines this sensitivity level based on the length of the beam (the distance between the transmitter and receiver).

Typically, the installer can select from more than one setting based on the length of the beam used in a given application. For Underwriters Laboratories® (UL)-listed detectors, the sensitivity

setting must comply with UL Standard 268, Smoke Detectors for Fire Protective Signaling Systems.

Operational Characteristics

Beam smoke detectors are sensitive to the cumulative obscuration (a measure of the percentage of light blockage) presented by a smoke field. This cumulative obscuration is created by a combination of smoke density and the linear distance of the smoke field across the projected light beam.

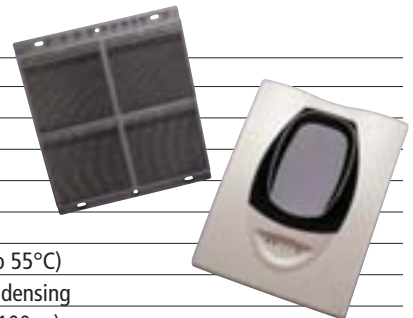
Because the sudden and total obscuration of the light beam is not a typical smoke signature, the detector will generally see this as a trouble condition, not an alarm. This threshold is typically set by the manufacturer at a sensitivity level that exceeds 90 percent

Reflected Type Beam Smoke Detector BEAM1224S:

The BEAM1224S is a 4-wire, single-ended, reflected type beam smoke detector that includes an 8" reflector and an integral sensitivity test.

BEAM1224S

Detection:	Infrared Beam
Wiring:	4-wire
Operating Voltage:	15 to 32 VDC
Alarm Current:	38.5 mA max. avg.
Standby Current:	17 mA max. @ 24 VDC
Trouble Current:	8.5 mA max. @ 24 VDC
Temperature Range:	-22°F to 131°F (-30°C to 55°C)
Humidity Range:	10% to 93% RH noncondensing
Range:	16 ft. to 328 ft. (5 m to 100 m)
Sensitivity:	Level 1 - 25%; Level 2 - 30%; Level 3 - 40%; Level 4 - 50%; Acclimate Level 1 - 30-50%; Acclimate Level 2 - 40-50%
Dimensions:	Detector: 10" H x 7.5" W x 3.3" D (254 mm x 191 mm x 84mm); Reflector, 16-230 ft.: 7.9" H x 9.1" W (200 mm x 230 mm)





total obscuration. This minimizes the possibility of an unwanted alarm due to the blockage of the beam by a solid object, such as a sign or ladder inadvertently placed in the beam path.

Very small, slow changes in the quality of the light source are also not typical of a smoke signature. These changes may occur because of environmental conditions, such as dust and dirt accumulation on the transmitter and/or receiver's optical

assemblies. An Automatic Gain Control (AGC) typically compensates for these changes.

When the detector is first turned on and put through its set-up program, it assumes the light signal level at that time as a reference point for a normal condition. As the quality of the light signal degrades over time, perhaps due to dust, the AGC will compensate for this change. The rate of compensation is limited to ensure that the detector will be

sensitive to slow or smoldering fires. When the AGC can no longer compensate for the loss of signal, such as with an excessive accumulation of dirt, the detector will signal a trouble condition.

Accessories to the beam smoke detector may include remote annunciators and remote test stations that allow for the periodic electronic and/or sensitivity testing of the detector. Intelligent fire alarm systems can give the beam smoke detector a

(Continued on page 8)

GUIDELINES

Retail Characteristics Impact Detector Selection (Continued from page 7)

discrete address to provide better annunciation of the fire location. Conventional systems may also remotely annunciate through the use of relays.

Spot-Type vs. Beam Detector Applications

Like spot-type smoke detectors, beam smoke detectors are inappropriate for outdoor applications. Environmental conditions, such as temperature extremes, rain, snow, sleet, fog and dew, can interfere with the proper operation of the detector. Outdoor conditions make smoke behavior impossible to predict.

Spot-type smoke detectors are considered to have a maximum coverage of 900 square feet or 30 feet by 30 feet. The maximum length between detectors is 41 feet when the width of the area being protected does not exceed 10 feet, as in a hallway.

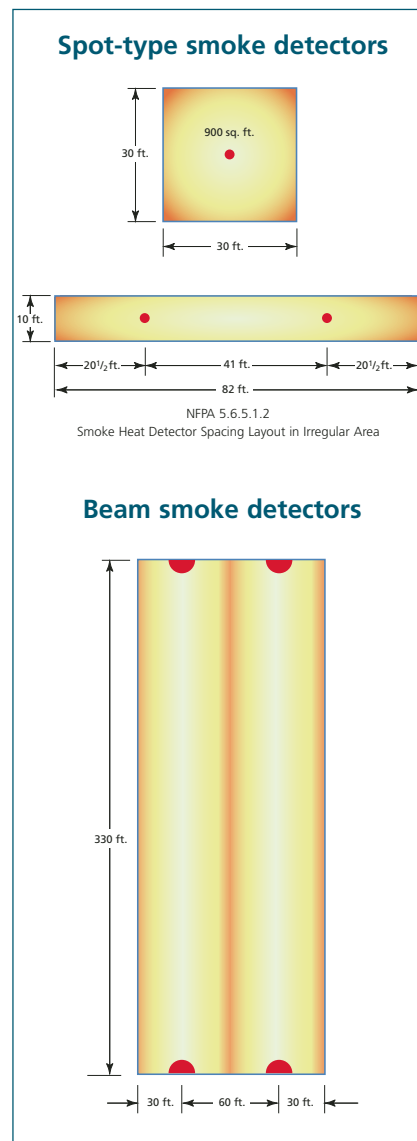
Beam smoke detectors generally have a maximum range of 330 feet and a maximum distance between detectors of 60 feet. This gives the beam smoke detector theoretical coverage of 19,800 square feet. Manufacturer's recommendations and other factors, such as room geometry, may impose practical reductions of this maximum coverage.

Even with these reductions, a beam smoke detector can cover an area that would require a dozen or more spot-type detectors, which generally decrease in response as their distance from the fire increases. The advantage is that fewer devices mean lower installation and maintenance costs.

When fires start at or near floor level, the smoke produced

will rise to or near the ceiling. Typically, the column of smoke begins to spread out as it travels from its point of origin, forming a smoke field in the shape of an inverted cone. The density of the smoke field can be affected by the rate of growth of the fire. Fast fires tend to produce more uniform density throughout the smoke field than slow-burning fires where there may be dilution at the upper elevations of the smoke field.

In many high-ceiling applications, such as retail space, beam smoke detectors may be more responsive to slow or smoldering fires than spot-type detectors because they are looking across the entire smoke field intersecting the beam. Spot-type detectors can only sample smoke at their particular "spot." The smoke that enters the chamber may be diluted below the alarm threshold, which is the level of smoke needed for an alarm.



Detector of Choice

The major limitation of projected beam smoke detectors is that these units are line-of-sight devices and are, therefore, subject to interference from any object or person entering the beam path. This may make its use impractical in occupied areas with normal ceiling heights.

However, many facilities have areas where beam smoke detectors are the detector of choice. High-ceiling areas, such as atriums in multi-level facilities, lobbies, gymnasiums, sports arenas, museums, factories and warehouses might be candidates for beam smoke detectors.

Many of these applications present special problems for the installation of spot-type detectors (e.g., high air velocity, stratification, hostile environments, sensitivity, location, spacing and mounting) and even greater problems for their proper maintenance. The use of beam smoke detectors may reduce these problems because fewer devices are required and the devices can be mounted on walls, which are more accessible than ceilings. **LS**

DH100ACDCLP Photoelectric Duct Smoke Detectors

- Air velocity rating from 100 to 4000 feet per minute
- Patented interconnectability for multi-fan shutdown
- Patented cover tamper trouble signal
- Equipped with two DPDT Form C Relay Contacts
- 3-year warranty



DH100ACDCLWP Watertight Duct Smoke Detector

- NEMA 4 UL listed for non-hazardous indoor and outdoor applications
- Eliminates the need for a separate enclosure
- Air velocity rating from 100-4000 feet per minute
- 24VAC/DC or 120/240VAC operation
- Ideal for rooftop applications



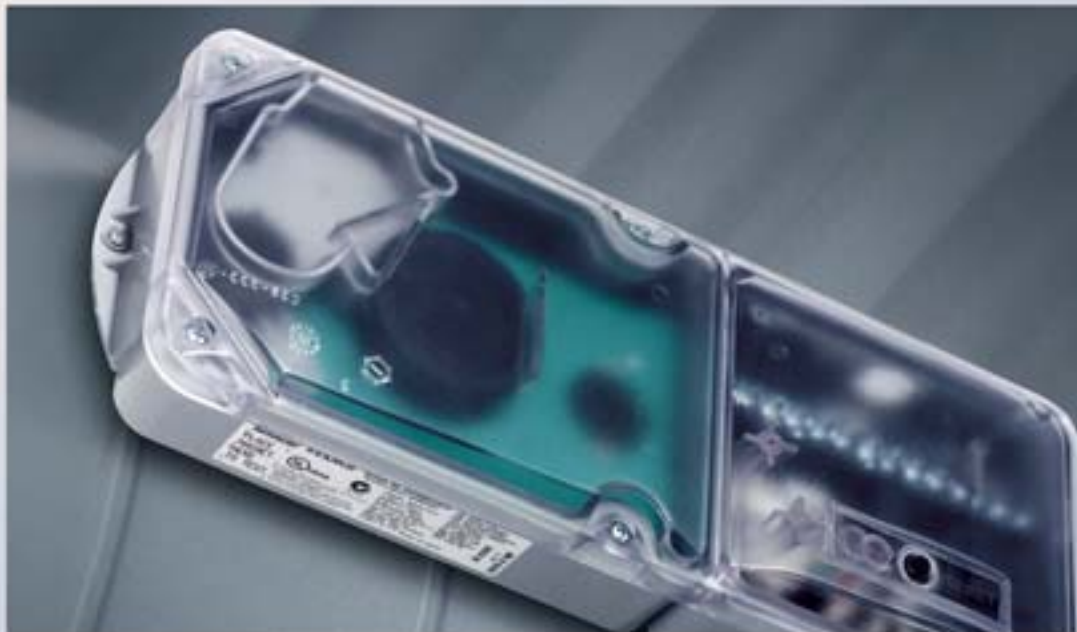
2151 Low-Profile Detector for Special Applications

- UL 268A listed specifically for use in 0-500 feet per minute no-flow/low-flow air-handling systems
- Low standby current
- Field sensitivity metering of detector to meet the requirements of NFPA 72
- 120VAC and 24VAC/DC bases with built-in shoring spring



Complete Line of Accessories Available, Including the SSK451 Remote Annunciator

- Audible and visible alarm annunciation
- Key activated test and reset functions
- Green, amber, and red LEDs provide visual indication of power, trouble and alarm conditions
- Optional smoke strobe (shown)



One company, one family, one solution...

System Sensor draws on years of experience in designing and testing detection and annunciation devices to offer the **Innovair™** family of duct smoke detectors and accessories. The standard Innovair model, DH100ACDCLP, with Low-Flow technology results in superior detection even in low air speed environments. Time saving features and innovation, coupled with System Sensor's experience and service are at the heart of Innovair's field proven designs.

Today's Variable Air Volume systems and fire/smoke damper applications are often associated with lower air speed conditions which can challenge detection devices. Innovair with Low-Flow technology, capable of a 100-4000 FPM air velocity rating, is perfectly suited for these difficult airflow environments.

To complement the standard Innovair, Watertight model DH100ACDCLWP with UL NEMA 4 rating is ideal for rooftop applications while providing a greater level of environmental protection. Our complete offering of audible and visual accessories, including the SSK451 Multi-signaling device, broadens the level of annunciation and makes meeting local codes a breeze.

Call on System Sensor to simplify your projects and provide cost effective solutions with the Innovair family. System Sensor's dedication to meeting your needs doesn't end at the point of sale. We have application engineers ready, a customer support department on call and technical documentation available 24/7 through the internet or CD-ROM.

Find out how Innovair Smoke Detectors with Low-Flow technology offer an advanced solution to your air duct smoke detection needs. For a free E•DOCS™ CD-ROM, a comprehensive resource of technical information, call **800/736-7672**.



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Whether you're specifying, installing, or recommending smoke detection products, count on the Innovair family from System Sensor.

ADAAG Update

New guidelines include detailed specifications for alarm design and installation.

The revised Americans with Disabilities Act Accessibility Guidelines (ADAAG), which harmonize the ADA guidelines with the National Fire Protection Association (NFPA) and American National Standards Institute (ANSI), were completed last year. The Access Board, an independent federal agency devoted to accessibility for people with disabilities,

coordinated extensively with these model code groups and standard-setting bodies so that differences could be reconciled. Through this update, the Board sought to make its guidelines more consistent with model building codes and industry standards in order to make compliance easier.

The guidelines have not taken effect yet and are not mandatory

for the public, but instead serve as the baseline for enforceable standards. Essentially, the Access Board only writes the ADAAG as a “standard,” which then has to be adopted by the affected governmental bodies. In this respect, they are similar to a model building code in that they are not required to be followed except as adopted by an enforcing authority.

Under the ADA, the Department of Justice and, in the case of transit facilities, the Department of Transportation, are responsible for enforceable standards based on the Board’s guidelines. These agencies will update their accessibility standards based on the new guidelines. In doing so, they will indicate when the new standards are to be followed.

The final revised guidelines are not enforceable and will not have any impact until they are adopted as enforceable standards by the following agencies:

- **Department of Justice:** State and local government facilities, places of public accommodation and commercial facilities
- **Department of Transportation:** Public transportation facilities owned or operated by state and local governments and the National Railroad Passenger Corporation
- **Department of Housing and Urban Development:** Federally financed residential facilities
- **Department of Defense:** Military facilities
- **United States Postal Service:** Postal facilities



Audible/Visible Notification

P1224MCK: The SpectrAlert P1224MCK is an outdoor red Selectable Output Horn/Strobe that self-adjusts for 12-or 24-volt operation.

Color:	Red
Voltage:	12 or 24 VDC and FWR unfiltered
Candela:	Selectable - 15, 15/75, 30, 75, or 110 cd
Operating Voltage Range:	12 V: 8-17.5 V; 24 V: 16-33 V
Operating Voltage Range with MDL:	12 V: 9-17.5 V; 24 V: 17-33 V
DC Max. Operating Current - Strobe:	(see Data Sheet for complete current draw information)
FWR Max. Operating Current - Strobe:	(see Data Sheet for complete current draw information)
Wiring Gauge:	12 to 18 AWG
Operating Temperature:	-40°F to 151°F (-40°C to 66°C)
Maximum Humidity:	95% as tested per UL464
Mounting:	4" x 4" x 1-1/2" or 2" x 4" x 1-7/8" standard boxes
Dimensions with universal plate:	5" x 5-5/8" x 2-15/16"
Dimensions with small footprint plate:	3-3/8" x 5-5/8" x 2-5/16"
Weight:	8.8 oz.



• General Services

Administration: All other federally financed facilities

The Department of Justice, Department of Transportation, Department of Housing and Urban Development and General Services Administration will publish a notice in the federal register regarding a comment period on whether to adopt the final revised guidelines as enforceable standards.

All of these departments are on separate timeframes for adoption. This will likely result in even more confusion as some groups apply the standards of the old ADAAG while some have already adopted the new set, including the USPS, which has identified Oct. 1, 2005, as the active date. In contrast, the Department of Justice is particularly slow, and the Access Board tech support hot line has suggested that it

might be two years away from adoption. The following steps need to take place:

- Analyze public comments from comment period that ended May 31, 2005.
- Reissue the "proposed rule" incorporating the public comments.
- Hold another public comment period, including public hearings around the country.
- Analyze public comments.
- Finalize the new ADAAG as an enforceable standard with effective dates.

What Changes Lie Ahead or Fire Safety?

Chapter 7: "Communication Elements and Features" expands on the fire and life-safety system changes that will affect building professionals based on adoption of the proposed ADAAG.

This chapter provides technical

criteria for communication elements, such as fire alarms (702), signs (703), telephones (704), detectable warnings (705), assistive listening systems (706), ATMs and fare machines (707) and two-way communication systems (708).

Substantive changes include: addressing technical criteria for fire alarms through the National Fire Alarm Code (NFPA 72), which effectively overhauls specifications for visual alarms in a manner that will facilitate compliance while enhancing design and installation options.

The new ADAAG goes a long way toward reconciling the differences between it and NFPA 72 that have resulted in confusion over the past several years. Once it is fully adopted, the guideline will make compliance for notification appliances much easier. [LS](#)

Varying Factors Complicate Smoke Detector Selection

Consider environmental characteristics, such as building or room type, facility use and possible contaminants, when selecting and installing smoke detectors.

Smoke detectors are based on simple concepts, but certain design considerations need to be observed. They should produce an alarm signal when smoke is detected, but should minimize the impact of an unwanted signal, which can arise from a variety of causes.

There are two basic types of smoke detectors: ionization and photoelectric. The sensing chambers of these detectors use different principles of operation to sense the visible or invisible particles of combustion given off in developing fires.

In an ionization detector, dust and dirt can accumulate on the radioactive source and cause it to become more sensitive. In a photoelectric detector, light from the light source may be reflected off the walls of the sensing chamber and be seen by the photosensitive device when no smoke is present. The entrance of insects, dirt, drywall dust and other forms of contamination into the sensing chamber can also reflect light from the light source onto the photosensitive device.

Electrical transients and some kinds of radiated energy can affect the circuitry of both ionization and photoelectric smoke detectors and be

interpreted by the electronic circuitry to be smoke, resulting in nuisance alarms. Underwriters Laboratories establishes the allowable sensitivity ranges for both types of detectors, and all are verified by their performance in fire tests. Regardless of their principle of operation, all smoke detectors are required to respond to the same test fires.

Selecting a Smoke Detector

An ionization detector is more suitable for detection of fast-flaming fires with combustion particles from 0.01 to 0.4 microns. Photoelectric smoke detectors are better suited to detect slow, smoldering fires that are characterized by particulates from 0.4 to 10.0 microns. Each type of detector can detect both types of fires, but their respective response times will vary.

Because the protected buildings normally contain a variety of combustibles, it is often very difficult to predict what size particulate matter will be produced by a developing fire. The fact that different ignition sources can have different effects on a given combustible further complicates the selection.

A lighted cigarette, for example, will usually produce a slow, smoldering fire if it is

dropped on a sofa or bed. However, if the cigarette happens to fall upon a newspaper on top of a sofa or bed, the resulting fire may be characterized more by flames than by smoldering smoke. The innumerable combustion profiles that are possible with various fire loads and ignition sources make it difficult to select the type of detector best suited for a particular application.

Placement Issues

Smoke detectors offer the earliest possible warning of fire. They have saved thousands of lives in the past and will save more in the future. Nevertheless, smoke detectors do have limitations. They may not provide early warning of a fire developing on another level of a building. A first floor detector, for example, may not detect a second floor fire. For this reason, detectors should be located on every level of a building.

Additionally, detectors may not sense a fire developing on the other side of a closed door. In areas where doors are usually closed, detectors should be located on both sides of the door.

Detector placement is critical to early warning functions. To provide effective early warning of

Audible/Visible Notification Sounder

PA400B: The PA400B is a beige 12/24 volt sounder.

Color:	Beige
Voltage:	12/24 V
DC Max. Operating Current - Strobe:	12/15 mA
Wiring Gauge:	12 to 18 AWG
Mounting:	Single gang back box (surface); 4" x 4" x 2-3/4" BBD back box (flush)
Dimensions:	4-1/2" x 2-3/4" x 1-1/8"
Weight:	2.4 oz. (159 g)



a developing fire situation, smoke detectors should be installed in all areas of the protected premises.

Total coverage as defined by NFPA 72 should include all rooms, halls, storage areas, basements, attics, lofts and spaces above suspended ceilings, including plenum areas utilized as part of the HVAC system. In addition, this should include all closets, elevator shafts, enclosed stairways, dumbwaiter shafts, chutes and other subdivisions and accessible spaces.

In general, when only one smoke detector is required in a room or space, the detector should be placed as close to the center of the ceiling as possible. Central location of the detector is best for sensing fires in any part of the room. If a center location is not possible, it may be placed no closer than 4 inches from the wall, or if listed for wall mounting, it may be mounted on the wall.

Wall-mounted detectors should be located between 4 and 12 inches from the ceiling to the top of the detector and at least 4 inches from any corner wall junction. When air supply and/or air return ducts are present in a room or space, the detector(s) should not be placed in the path of the airflow supply or return duct (NFPA 72, 19-99 Edition).

Fire Safety Functions

Smoke detectors are often utilized to control ancillary equipment. Most detectors used in releasing service have auxiliary relay contacts, which are directly connected to the system or device to be controlled. Care should be taken to ensure that detectors utilized in such a manner are approved for releasing service.

A few typical applications include:


- Controlling the flow of smoke in air handling and air conditioning systems.
- Releasing doors to contain smoke in a fire situation.
- Releasing locks to allow exit in a fire situation.
- Capturing and recalling elevators in a fire situation.
- Activating a suppression system.

Spacing and placement requirements for detectors used in releasing service may be different from detectors used in conventional open area applications. It is recommended that 4-wire detectors be used in these situations because depending on the control panel and detectors used, more than one detector relay on a circuit may not receive enough power from the 2-wire circuit to operate during alarm.

Testing, Maintenance and Service

Smoke detectors are designed to be as maintenance-free as possible. However, dust, dirt and other foreign matter can accumulate inside a detector's sensing element and change its sensitivity. They can become either more sensitive, which may cause unwanted alarms, or less sensitive, which could reduce the amount of warning time given in case of a fire. Both are undesirable.

Therefore, detectors should be tested periodically and maintained at regular intervals. Follow the manufacturer's specific recommended practices for maintenance and testing closely. Also refer to Appendix B of NFPA 90A and NFPA 72, Chapter 7.

Smoke tests are helpful in determining proper placement. Special attention should be given to smoke travel directions and velocity because either can affect detector performance. Placement of detectors near air conditioning or incoming air vents can also cause excessive accumulation of dust and dirt on the detectors. Dirt can cause detectors to malfunction and cause unwanted alarms. Detectors should not be located closer than 3 feet from an air supply diffuser or an air return vent. 

Need, Application and the Location of Detectors

This section answers standard and submitted questions about System Sensor's products, applications and installations. Your questions are invited at info@systemsensor.com.

Q: What detector can be used in difficult environments that expose the unit to dust, dirt, insects and occasional water spray?

A: Filtrex™ is a specially designed smoke detector that filters airborne particulates so it can concentrate on sensing smoke. It provides early detection before slower-responding thermal detectors.

Filtrex is an enclosed intelligent photoelectric smoke detector. Filtrex draws air through high-density filters. One filter is field-cleanable; the other is permanent to protect the sensing chamber. A fan cycle to increase life expectancy and reduce current draw pulls the air through the fine filters, past the sensing chamber and back out the cover. Gaskets provide additional dust protection.

Q: What are some of the causes of nuisance alarms?

A: Nuisance alarms could result from a wide variety of causes:

- Locations where detectors will not operate properly because of temperatures outside of the detectors' range, excessive dust, dirt or humidity, excessive air flow rates or the presence of combustion particles in the air streams surrounding the detectors.
- When intelligent detectors' wiring is not protected from interference from induced current and noise in adjacent wiring systems, radio-frequency transmissions and other electromagnetic effects.
- Lack of annual maintenance can result in accumulation of dust and dirt on the detectors' sensing chambers. Maintenance checks should be scheduled as needed.
- Seasonal effects such as the reactivation of a building's heating system after summer shutdown can cause nuisance alarms in HVAC applications.
- Induced current from lightning storms, although rare, could cause nuisance alarms in HVAC systems.
- Infestation from insects small enough to enter the detector's sensing chamber screen or through openings in the back of the detector.
- Vandalism or mischievous acts.

Q: What are some specific placement issues?

A: The best way to avoid nuisance alarms is to install the proper detector for its environment. Read System Sensor's installation instructions for proper placement and location of different types of detectors.

Outdoors: Avoid using detectors in open storage sheds or other open structures affected by dust, air currents or excessive humidity and temperature extremes.

Wet or humid areas: Avoid damp, wet or excessively humid areas, such as next to restrooms with showers.

Extreme cold or hot environments: At temperatures below 0°C/32°F, ice crystals or condensation can appear in the sensing chamber. At temperatures above the operating range (49°C/ 120°F), internal components may not function properly.

Areas with combustion particles: Avoid using detectors in commercial kitchens or other areas with ovens and burners and in parking garages where particles of combustion are present.

Fluorescent light fixtures: Do not place detectors too close to fluorescent light fixtures. Electrical noise may cause nuisance alarms.

Areas exposed to exterior drafts: Avoid areas near external doorways in corridors or within 3 feet of either a supply or return vent.

Please refer to www.systemsensor.com and your local codes for more information.

Intelligent Smoke Detector

FTX-P1: Filtrex™ aspirated smoke detector for dusty and dirty environments.

Operating Temperature Range:	32°F to 120°F (0°C to 49°C)
Operating Humidity Range:	10% to 93% RH noncondensing
Air Velocity:	0-4000 fpm (0 to 20.3 m/s)
Dimensions:	4" Dia., 3.5" High
Shipping Weight:	7.3 oz. (207 g)
Voltage Range:	15 - 32 VDC
Standby Ratings:	250 µA @ 24 VDC (w/o communication); 360 µA @ 24 VDC (w/o communication)
Power Supply Current:	Max.: 123 mA; Avg: 27 mA
LED Current:	6.5 mA @ 24 VDC (on)
Air Intake Fan:	On for 5 sec. every 30 sec.
Filter:	Airflow checked every 4 hrs.



Looking For A New Ceiling In Alarm Notification?

At System Sensor® we realize the importance of aesthetic design. Our SpectrAlert® ceiling-mount line has a compact, circular shape for a lower-profile, less obtrusive appearance.

A Complete Line

Designed specifically for ceiling-mount applications, the SpectrAlert ceiling series is optimized for performance. This is a full line of 24-volt strobe products, offered in 15, 15/75, 30, 75, 95, 115 and 177 candela.

Now you can accommodate virtually any ceiling-mount installation, including sleeping areas, over a 24-volt circuit.

Installation Ease

The SpectrAlert ceiling-mount series incorporates time-saving features, including captured mounting screws, switch-selectable horn tones and a low-profile design that fits standard back boxes with minimal intrusion. The innovative circular design allows for greater placement flexibility, even when the back box is not properly aligned.

In addition, the SpectrAlert ceiling series allows you to save on installation time and cost. To meet light-output requirements, you can substitute a smaller number of ceiling-mount devices in place of wall-mount devices in some applications.



The SpectrAlert® ceiling-mount series includes Horn/Strobes, Strobes and Speaker/Strobes.

Performance

The SpectrAlert name is built on low current draw performance. Lower current draw translates into more devices per loop, for a lower installed cost over other designs.

Find out why SpectrAlert products make sense for your application. For a free E•DOCS™ CD-ROM, a comprehensive resource of technical information, call 800/736-7672.



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SENSOR®**

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www.spectralert.com

SPECTRAlert®
from System Sensor

advanced ideas. advanced solutions.™

Pinnacle™ Smoke Detection for critical process and equipment areas



Intelligent, addressable smoke detector has alarm settings to 0.02% per foot obscuration for ultra-high sensitivity

Provides earliest possible detection for critical process and equipment areas, such as:

- Telecommunication rooms
- Network server rooms
- Clean rooms
- Semiconductor fabrication facilities
- High value property areas

Selectable Output Series™ for your notification needs



Notification devices with the industry's widest range of candela settings - 15, 15/75, 30, 75 and 110 candela

- All Selectable Output Series operate at dual voltage levels, self-adjusting for either 24 or 12 volts
- 2-wire and 4-wire models fit standard back boxes with no encroachment
- Exclusive mounting bracket and QuickClick™ reduces installation times

SpectrAlert® Ceiling Strobes for your entire building



Full line of 24-volt strobe notification products, offered with 15, 15/75, 30, 75, 95, 115 and 177 candela options

- Compact, circular shape for low-profile appearance
- Installs easily and fits standard back boxes - even if box is not properly aligned
- Captured mounting screws for cost effective installation
- Switch-selectable horn tones

For all your building protection needs ...

Think System Sensor

For all your building protection needs, System Sensor manufactures the highest quality fire detection and notification products available.

We make it our business to develop advanced ideas that deliver advanced solutions so when you think of building protection, you think System Sensor.

This type of forward thinking led System Sensor to develop the soon-to-be-available Eclipse™, a brand new industry-leading protocol with a complete line of products:

- Photoelectric Smoke Detectors
- Ionization Smoke Detectors
- Heat Detectors
- Photoelectric/Thermal Combination Detectors
- Input/Output Control Modules

Experience - System Sensor is a global manufacturer of fire detection and notification devices. For years, we have designed new products that utilize the most advanced technologies in the most inventive ways, yielding superior building protection products that are more convenient to install and more efficient to operate.

Quality - System Sensor places a high premium on research and development to offer products that provide the earliest detection of fire scenarios, as well as latest-technology audible and visible notification devices. The result is a line of products that is absolutely reliable for real-world applications.

Service - System Sensor is dedicated to meeting your needs. We have application engineers ready to help, a customer support department that is on call to support you, and technical documentation available 24/7 through automated FAX or CD-ROM.

For more information on System Sensor, or a free E-DOCS™ CD-ROM, a comprehensive resource of technical information, call System Sensor at 800/736-7672.



advanced ideas. advanced solutions.™

800/736-7672
www.systemsensor.com

Innovair™ Low-Flow Smoke Detectors for your ducts



Low-flow duct smoke detector with the widest range of airflow speeds - 100 to 4,000 FPM

- Specifically designed to meet Variable Air Volume systems
- Eliminates need for in-duct, pendant-type detectors
- Cover missing signal
- Watertight and high temperature models available

Acclimate™ Smoke Detectors maximize fire detection while reducing unwanted alarms



A multicriteria photo/thermal detector with built-in algorithms to minimize the effects of transient signals

- Monitors ambient "noise" levels and adjusts sensitivity automatically
- Analyzes trends in smoke signals to process out many unwanted alarms
- Compensates for gradual dust build-up to notify the control panel when maintenance is required